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L33: Entry 6 of 10

File: JPAB

Apr 28, 1997

PUB-NO: JP409107910A

DOCUMENT-IDENTIFIER: JP 09107910 A

TITLE: TABLET OF LENTINUS EDODES SING. AND ITS PRODUCTION

PUBN-DATE: April 28, 1997

INVENTOR-INFORMATION:

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APPL-NO: JP07308089

APPL-DATE: October 20, 1995

INT-CL (IPC): A23 L 1/212; A23 L 1/28; A23 L 1/304; A23 L 1/308; A61 K 9/20; A61 K 35/84

ABSTRACT:

PROBLEM TO BE SOLVED: To produce a readily drinkable nourishing supplementary food utilizing Lentinus edodes Sing. abundantly containing various nutrients and provide a method for producing the food without deteriorating and reducing the contained ingredients.

SOLUTION: This tablet comprises ingredients of Lentinus edodes Sing., a shape retaining agent and a shape stabilizer. The moisture content is regulated to a prescribed value. The tablet of the Lentinus edodes Sing. of a prescribed shape and size is obtained by mixing the ingredients of the Lentinus edodes Sing. with the shape retaining agent and shape stabilizer, drying the resultant mixture at a relatively low temperature, regulating the moisture content to the prescribed value, then cooling the regulated mixture to normal temperatures and subsequently compression forming the cooled mixture.

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End of Result Set

L36: Entry 4 of 4

File: DWPI

Apr 28, 1997

DERWENT-ACC-NO: 1997-292418

DERWENT-WEEK: 199727

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TITLE: Tablet containing Lentinus edodes (Berk.) Pegler, useful as nutritional supplement - is prepared from Lentinus edodes pegler, filler(s) and optionally starch and stabiliser e.g. sugar ester

PATENT-ASSIGNEE: MOTOHASHI T (MOTOI)

PRIORITY-DATA: 1995JP-0308089 (October 20, 1995)

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PATENT-FAMILY:

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APPLICATION-DATA:

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JP 09107910A	October 20, 1995	1995JP-0308089	

INT-CL (IPC): A23 L 1/212; A23 L 1/28; A23 L 1/304; A23 L 1/308; A61 K 9/20; A61 K 35/84

ABSTRACTED-PUB-NO: JP 09107910A

BASIC-ABSTRACT:

Tablet is prepared from component of Lentinus edodes (Berk.) Pegler, particularly dried powder prepared by UV light irradiation, filler(s), particularly food fibres, optionally further containing starch, and a form stabiliser, particularly sugar ester(s), and predetermined water content, particularly 5-12 wt.%. Preferably tablets contains 10-20 wt.% of filler(s). The tablets contain 2-5 wt.% of the form stabiliser. The components of Lentinus edodes (Berk.) Pegler obtained by water extraction of the powder for a predetermined time. Preferably tablets further contains calcium as a trace element.

USE - Used as a nutritional supplement. In an example, a mixt. of 77 wt.% of powder of concentrated extract of Lentinus edodes (Berk.) Pegler, 15 wt.% of a microcrystalline cellulose, 5 wt.% of alpha-starch and 3 wt.% of a sugar ester was dried at 50-80 deg.C and tabletted at 3-6 t/square cm G to give the tablet.

ABSTRACTED-PUB-NO: JP 09107910A

EQUIVALENT-ABSTRACTS:

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審査請求 未請求 請求項の数15 書面 (全5頁) 最終頁に統く

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(22)出願日 平成7年(1995)10月20日	(72)発明者 本橋 富壽 東京都練馬区下石神井1丁目3番7号 (72)発明者 本橋 洋子 東京都練馬区下石神井1丁目3番7号

(54)【発明の名称】 しいたけの錠剤及びしいたけの錠剤の製造方法

(57)【要約】

【課題】各種の栄養素を豊富に含むしいたけを利用した飲み易い栄養補助食品、及びこのような栄養補助食品の含有成分を劣化、減少させることなく量産化できる製造方法を提供する。

【解決手段】しいたけ成分と、保形剤と、形状安定剤とを備え、水分含有量を所定値に調整する。しいたけ成分と保形剤と形状安定剤とを混合し、これらを比較的低温下で乾燥して水分含有量を所定値に調整し、次いで常温まで冷却し、次いで圧縮成形して所定の形状、大きさのしいたけの錠剤を得る。

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【特許請求の範囲】

【請求項1】 しいたけ成分と、保形剤と、形状安定剤とを備え、水分含有量を所定値に調整したことを特徴とするしいたけの錠剤。

【請求項2】 前記保形剤が、食物繊維であることを特徴とする請求項1に記載のしいたけの錠剤。

【請求項3】 前記保形剤が、食物繊維と澱粉であることを特徴とする請求項1に記載のしいたけの錠剤。

【請求項4】 前記保形剤を10～20重量%含むことを特徴とする請求項1～3の何れかに記載のしいたけの錠剤。

【請求項5】 前記形状安定剤が、シュガーエステルであることを特徴とする請求項1～4の何れかに記載のしいたけの錠剤。

【請求項6】 前記形状安定剤を2～5重量%含むことを特徴とする請求項1～4の何れかに記載のしいたけの錠剤。

【請求項7】 前記しいたけ成分が、紫外線を照射して乾燥させたしいたけの粉末であることを特徴とする請求項1～6の何れかに記載のしいたけの錠剤。

【請求項8】 前記しいたけ成分が、紫外線を照射して乾燥させたしいたけを、所定時間水に浸漬させて得られるしいたけの濃縮液であることを特徴とする請求項1～6の何れかに記載のしいたけの錠剤。

【請求項9】 水分含有量を5～12重量%に調整したことを特徴とする請求項1～8の何れかに記載のしいたけの錠剤。

【請求項10】 しいたけ成分と、しいたけに含まれない栄養素、しいたけに微量しか含まれない栄養素、又はしいたけに含まれる栄養素によって体内への吸収等が促進される栄養素、から任意に選択される栄養素と、保形剤と、形状安定剤と、からなるしいたけの錠剤。

【請求項11】 前記栄養素が、カルシウムであることを特徴とする請求項10に記載のしいたけの錠剤。

【請求項12】 しいたけ成分に保形剤及び形状安定剤を混合し、次いでこれらを比較的低温にて乾燥して水分含有量を所定値に調整した後に常温まで冷却し、次いで圧縮成型することにより所定の形状・大きさの錠剤を成形することを特徴とするしいたけの錠剤の製造方法。

【請求項13】 前記しいたけ成分が、紫外線を照射して乾燥させたしいたけを粉碎したしいたけ粉末であることを特徴とする請求項12に記載のしいたけの錠剤の製造方法。

【請求項14】 前記しいたけ成分が、紫外線を照射して乾燥させたしいたけを、所定時間水に浸漬させて生成したしいたけの濃縮液であることを特徴とするしいたけ請求項12に記載のしいたけの錠剤の製造方法。

【請求項15】 前記しいたけ成分に、しいたけに含まれない、又はしいたけに微量しか含まれない栄養素から任意に選択される栄養素も混合することを特徴とする請求

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項12に記載のしいたけの錠剤の製造方法。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、手軽に摂取できるしいたけの錠剤、及びしいたけの錠剤の製造方法、に関する。

【0002】

【従来の技術】近年の健康指向や成人病の増加等に伴い、手軽に摂取でき、継続的な使用により体質の改善が期待できると共に、薬剤のような副作用を伴わない各種の栄養補助食品（サプリメント）が市場に供給されている。

【0003】このような栄養補助食品として広く知られている物の一つにしいたけの加工品がある。しいたけはビタミンDの前駆体であるエルゴステロールやビタミンB類、エリタデニン（レンチナン）、二本鎖リボ核酸、ミネラル分、食物繊維等を多く含み、血液中のコレステロールを減少させ、鎮痛作用、制ガン作用、免疫力の向上、血糖値の抑制等の種々の効果が期待できる上に、カロリーが殆どないため、しいたけを主成分とした食品は理想的な栄養補助食品と言える。

【0004】

【発明が解決しようとする課題】ところが、上記効能が知られているにも拘わらず、しいたけを主成分とした栄養補助食品は余り広く利用されていないのが現状である。その理由の一つとして、従来のしいたけ食品の多くが粉末状・顆粒状（以下「粉末状」と称する）であることが挙げられる。粉末状であると咽や口内に付着する等飲みにくさは避けられず、一日に数回、継続的に摂取することが苦痛を伴うことになる。特に、幼児、高齢者、病弱な人等にとっては摂取が非常に困難である。また、水分と共に摂取させると、全体量が増えるので一度に少量しか摂取できなくなり、しいたけ成分の摂取量を増やすとすると摂取の頻度を増やさざるを得ず、また飲料水等を別に用意する必要があるので、例えば車中では摂取が困難である。更に、粉末を水分に解かした場合や干ししいたけを水に浸漬させて得た液体のエキスでは新たに臭いの問題が発生し、しいたけ独特の臭いが苦手な人にとっては臭いを我慢しながら摂取することになり、やはり苦痛を伴うことになる。

【0005】このように、従来のしいたけ食品は摂取に際して我慢、苦痛、不便を感じさせるので「手軽に摂取できる栄養補助食品」とは言えず、長期間継続的に摂取して徐々に効果を発揮させる栄養補助食品としては不適当であったがために、普及の障壁となっていたと考えられる。

【0006】本発明は、上記問題点に鑑み、しいたけに含まれる各種栄養素や薬効成分等を凝縮して、手軽に且つ効率的に摂取できるしいたけの錠剤、及びこれらの有効成分を損なうことなく量産化が可能なしいたけの錠剤

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の製造方法の提供を目的とする。尚、本出願においては、栄養素の語は一般に言われるそれだけではなく、広く人体に好影響をもたらす全ての成分を意味する。

【0007】

【課題を解決するための手段】上記従来の課題を解決するため本発明は、しいたけ成分と、保形剤と、形状安定剤とを備え、水分含有量を所定値に調整したことを特徴とする。

【0008】本発明の好ましい態様においては、

(1) 前記保形剤は食物繊維、又はこれと澱粉とを組み合わせたものである。

(2) 前記保形剤を10~20重量%含む。

(3) 前記形状安定剤が、シュガーエステルである。

(4) 前記形状安定剤を2~5重量%含む。

(5) 前記しいたけ成分が、紫外線を照射して乾燥させたしいたけの粉末である。

(6) 前記しいたけ成分が、紫外線を照射して乾燥させたしいたけを、所定時間水に浸漬させて得られるしいたけの濃縮液である。

(7) 水分含有量を5~12重量%に調整する。

【0009】また、本発明は、しいたけ成分と、しいたけに含まれない栄養素、しいたけに微量しか含まれない栄養素、又はしいたけに含まれる栄養素によって体内への吸収等が促進される栄養素、から任意に選択される栄養素と、保形剤と、形状安定剤と、からなることを特徴とする。

【0010】本発明の好ましい態様においては、前記栄養素が、カルシウムである。

【0011】更に、本発明は、しいたけ成分に保形剤及び形状安定剤を混合し、次いでこれらを比較的の低温にて乾燥して水分含有量を所定値に調整した後に常温まで冷却し、次いで圧縮成型することにより所定の形状・大きさの錠剤を成形することを特徴とする。

【0012】本発明の好ましい態様においては、

(1) 前記しいたけ成分が、紫外線を照射してしいたけを乾燥させ、この乾燥しいたけを粉碎したしいたけ粉末である。

(2) 前記しいたけ成分が、紫外線を照射して乾燥させたしいたけを、所定時間水に浸漬させて生成したしいたけの濃縮液である。

(3) 前記しいたけ成分に、しいたけに含まれない、又はしいたけに微量しか含まれない栄養素から任意に選択される栄養素も混合する。

【0013】

【実施の形態】以下、本発明の実施の形態を詳述する。

【0014】(第一の形態) 本発明に係るしいたけの錠剤の一例として、しいたけ粉末(顆粒を含む、以下同じ)と、保形剤と、形状安定剤とを備え、水分含有量を所定値に調整したものが挙げられる。しいたけ粉末としては、予め乾燥させたしいたけを粉碎機で粉碎したもの

用いるのが一般的であるが、生のしいたけをカッター等で粗く裁断した後に乾燥させたものを使用すれば乾燥及び粉碎を効率的に行え、加工時間を短縮でき、粉碎機の経時的劣化も可及的に抑制できる。尚、しいたけを乾燥する場合には粉碎機への影響を考慮して、水分含有量が10重量%程度以下となるまで十分に乾燥させる。

【0015】本発明に用いられるしいたけは、生又は乾燥しいたけとして市販されているどんこやこうしん等だけでなく、主に外観上の理由からそのままでは商品価値がないとされているうす物、黒子等でもよい。ただし、しいたけジャミ等を用いる場合には不純物が残留する可能性があるため、フィルター やろ過装置等で不純物を除去する必要がある。

【0016】しいたけは生のままでもビタミンB類、カリウム等のミネラル分、食物繊維等を多く含んでいるが、天日干しすることによりビタミンDに変化するエルゴステロール(アレビタミンDとも称される)を豊富に含んでいるため、天日干しすることにより上記した薬事的效果に加え、カルシウムの体内への吸収を促進させ、

20 皮膚を活性化させる等の各種の効果を発揮する。従って、錠剤の原料とするしいたけも天日干しした乾燥しいたけを使用するのが最も好ましいが、天日干しに時間がかかるため(最低でも約4時間以上)量産化には適さない。一方、市販の干しいたけの多くは、生産性の点から温風や蒸気等による短時間乾燥を採用しているが、これでは前記したエルゴステロールがビタミンDに変化せず、薬効成分の増加は見られない。そこで、本発明は、天日干しと略同様の効果を発揮する紫外線照射乾燥を採用することにより、乾燥時間の短縮による生産性の向上と大量のビタミンDの生成という薬効成分の増加とを同時に達成することが可能となった。勿論、天日干しの乾燥しいたけを使用することも可能である。紫外線を照射する時間は季節や地域の気候、室温、しいたけの水分含有量等を勘案して決定するが、通常、1~2時間程度で十分である。

【0017】前記保形剤としては、基本的には錠剤成形用として用いられているものであれば種類は問わないが、本発明が栄養補助食品に係るものであることを考慮すると、人工的な合成物や動物性の物質はアレルギー等の問題もあり好ましくない。本発明者らは種々試行した結果、食物繊維、とくに微結晶セルロースが最も好適な結果をもたらすことを見い出した。好適な結果とはしいたけ粉末を所望形状に固化すると共に、打錠機への悪影響が少なく、更にアトピー症等のアレルギー体質の摂取者に影響が少なかったことを意味する。食物繊維であれば栄養補給という点でも優れた効果をもたらす。また、同様の結果は、食物繊維の一部をとうもろこし等から生成する澱粉、特に α 化澱粉に置き換えるを得られると考えられる。

40 50 【0018】保形剤の添加比率は、しいたけ粉末の場合

は10~20重量%とする。10重量%未満では錠剤の硬度が低く、ピン詰め工程や製品の輸送時等に錠剤が破損する怖れがある。一方、20重量%を越えると、成形品の強度は増すが、打錠機への負荷が大きく、杵臼の劣化が激しくなる。また、15重量%を越えると、成形品にザラつきが目立ち、舌触りがやや悪くなるので、15重量%を越える場合は澱粉の量を増やすと舌触りは緩和される。尚、しいたけの顆粒を使用する場合は、錠剤として必要な硬度は変わらず、成形はし易くなるため、保形剤の量を減らし、10~16重量%程度としてもよい。

【0019】前記形状安定剤は、前記保形剤と同様、成形品の硬度を向上させ、輸送時等の破損を防止すると共に、錠剤同士が相互に結着するのを防止し、表面に光沢を与えて商品価値を向上させるのに役立つ。形状安定剤の種類も不問であるが、シュガーエステルを用いると、しいたけ独特の臭いを緩和して錠剤を飲み易くする作用があるので好ましいと言える。形状安定剤は少量添加すればよく、通常2~5重量%で十分である。2重量%未満では、錠剤同士が結着する割合が飛躍的に高くなり、5重量%を越えるとしいたけ成分や保形剤の量が減少し、栄養補助食品としての価値の低下を招くと共に、成形がし難くなる傾向が見られた。

【0020】上記しいたけ粉末、保形剤及び形状安定剤を混合し、水分含有量を5~12重量%に調整する。5重量%未満では成形した錠剤に亀裂が入ったり、一部が欠損する等所望形状に固化しない可能性がある。また、12重量%を越えると、打錠機に粉末の一部が付着して杵臼に過剰な負荷がかかり、極端な場合、杵臼が破損する怖れもある。従って、水分含有量の調整はしいたけの錠剤の製造にとって非常に重要である。

【0021】成形されるしいたけの錠剤は、短円柱形、球形、短三角柱形等、形状は任意であるが、両側端のRを大きくした碁石形とすると成形（打錠）がし易く、体内での容融性（吸収性）も良好であった。

【0022】上記の成分からなるしいたけの錠剤は、栄養価が高いことは勿論のこと、動物性成分を含まないアレルギー体质の人が摂取してもアレルギーを起こす可能性が低く、また十分な強度（硬度）を有するので輸送時等でも破損する怖れがなく、更に各成分を所定値内に調整してあるので打錠機への負担も小さく製造面でも極めて有利である。

【0023】（第二の形態）本発明に係るしいたけの錠剤はまた、しいたけ成分として、乾燥しいたけを所定時間水に浸漬させて得られるしいたけの濃縮液を用いることもできる。保形剤、形状安定剤は上記した第一の形態と同様であり、水分含有量も基本的には同様であるが、本形態においては、しいたけ成分自体が水分を多量に含んでいることから、保形剤、形状安定剤を混合した段階で水分含有量を調整する際には、乾燥が主となる。本形

態のしいたけ成分は、第一の形態と同様の方法にて乾燥させたしいたけを所定時間（4~8時間）湯又は水に浸漬した後に50%程度に加熱濃縮して得られるしいたけの濃縮液である。しいたけ粉末に比べ、水に浸漬させる時間が長いため量産性の面ではやや劣るが、粉末のように工場内で飛散、浮遊しないため、作業環境が良好で、原材料の無駄も少なくなる。また、しいたけに含まれる、血圧を低下させる作用のあるエリタデニンは水溶性に富むため、しいたけ粉末よりもしいたけの濃縮液の方に（濃縮された形で）多く含まれることになる。

【0024】しいたけに含まれる栄養素のうち、食物纖維等は水溶性がないため、浸漬させても水には溶け出さない。そのため、しいたけの濃縮液を使用して錠剤を作ると、しいたけの一部の成分しか摂取できることになる。しかし、現在干ししいたけの戻し汁を毎朝欠かさず飲んでいるという人が多数存在することからも、水溶性のしいたけ成分（特にエリタデニン）のみを主成分としても栄養補助食品としては遜色ないものと思われる。勿論、水に浸漬させた後のしいたけを前記第一の形態と同様に乾燥、粉碎して錠剤に加工することも可能である。この場合には、水溶性の成分が含まれないことになるが、食物纖維、ビタミンB類等は依然として豊富に含まれていることから、これを錠剤としてもやはり栄養補助食品としては遜色ないものとなる。従って、本形態においては、しいたけの豊富な含有成分を分離して摂取者の要望に即した数種の錠剤を成形することになる。

【0025】（第三の形態）本発明は、前記のしいたけ成分、保形剤、及び形状安定剤に、しいたけに含まれない栄養素、しいたけに微量しか含まれない栄養素、又はしいたけに含まれる栄養素によって体内への吸収等が促進される栄養素、から任意に選択される栄養素を添加してもよい。しいたけは上記した通り、ビタミンB類、ミネラル分等を豊富に含んでおりが、全ての栄養素を多く含んでいるわけではない。即ち、栄養バランスを考えると、摂取者の年齢、体調、体质等からしいたけの成分だけでは十分とはいえない場合もある。また、しいたけに含まれている栄養素の中には、それ自体人体に良い効果をもたらすもの他、他の栄養素の体内への吸収を促進したり、他の栄養素と同時に摂取することにより好適な結果が得られるものも含まれている。このような栄養素を有効に利用するにはしいたけ成分にこれらの栄養素を添加する必要がある。更に、しいたけに含まれていても、他の食品から容易に摂取できない栄養素は、栄養補助食品からより多く摂取したい。

【0026】このような点を考慮して、本形態では、しいたけに含まれない栄養素、しいたけに微量しか含まれない栄養素、又はしいたけに含まれる栄養素によって体内への吸収等が促進される栄養素、から任意に選択される栄養素を添加することにした。例えば、前記したエルゴステロールから変化したビタミンDは、カルシウムや

たんぱく質の体内への吸収を促進する働きを有するため、添加する栄養素としてはこれらが好ましいと言える。ビタミンA、C、K等を添加したい場合には、大根の葉を始めとする緑黄色野菜に多く含まれているので、この乾燥粉末等を使用すればよい。

【0027】(製造方法) 次に、本発明に係るしいたけの錠剤の製造方法を説明する。まず、上記したしいたけ成分(粉末又は濃縮液)に保形剤、及び形状安定剤を所定比率で混合する(一例として、しいたけ成分77重量%、微結晶セルロース15重量%、 α 化澱粉5重量%、シュガーエステル3重量%)。

【0028】次いで、これらを60~80°C程度の比較的低温下にて徐々に乾燥させる。この時に天日や紫外線照射による乾燥を利用してもよく、この場合には、温風等で乾燥した干ししいたけをしいたけ成分として使用することもできる。即ち、錠剤を製造する何れかの段階でしいたけを天日又は紫外線照射により乾燥すればよいものである。乾燥時間を短縮するには、100°C以上の高温下で乾燥せねばよいが、上記第三の形態の様に別の栄養素を添加したときに、その栄養素が熱によって劣化、分解等してしまう怖れがあると共に、作業環境も悪化することは避けられない。従って、量産性の面で多少難はあるが、総体的には低温下で乾燥させるのがよい。尚、しいたけに含まれる主な栄養素は熱により劣化、分解等する怖れはないといわれているが、急速な高温乾燥により多少の悪影響はあるものと予想され、また極端な場合、蒸気や温風吹出し口に近い部分に熱変成が生ずる怖れもあるので、これらの点からも高温乾燥は避けるべきである。

【0029】乾燥の方法としては、温水式、蒸気式、温風式等、從来周知の種々の方法が考えられるが、一例として蒸気を利用した装置の概略を説明する。間接加熱容器の一時側に減圧弁を配置し、二次側に真空ポンプを配置し、このポンプで吸引することにより負圧で100°C以下の低温蒸気を発生させて間接加熱容器内に供給し、この容器内の密閉室内に投入したしいたけ成分(粉末又は濃縮液)を乾燥させる。このように蒸気を利用するメリットは伝熱係数が大きく均一な加熱を行えることである。一方、蒸気は熱貫流率が大きいため加熱速度が早過ぎるという問題があるので、できるだけ低温の蒸気を使

用するのが好ましい。かかる乾燥工程において、密閉室内的しいたけの水分含有量を、湿度計、重量センサ等で確認し上記した所定値に調整する。

【0030】次いで、これらの混合物を常温(20~25°C)まで冷却する。冷却は自然冷却でもよいが、冷風庫、冷蔵庫等に入れて急速に冷やしても差し支えない。乾燥直後の高温(60~80°C)の混合物をそのまま打錠機に入れると前記保形剤、形状安定剤が有効に作用せず、所望の形状に固化されない場合があった。常温まで冷却することにしたのは、摂取者が通常錠剤を保管する環境温度は常温であり、この温度にて成形することにより摂取者の保管時に変形、変成、破損等が生じないかを確認できるからである。

【0031】次いで、打錠機に上記混合物をかけ、打錠径5~12mm、充填高3~7mm程度として、打錠圧力3~6t/cm²Gで圧縮成形する。打錠機の一例として、回転式(ロータリー式)粉末圧縮成形機の概略構成を説明する。所定の形状、サイズのフレーム内に立シャフトを介して回転盤を水平回転可能に配設し、この回転盤に複数の臼を一定のピッチで設ける。各臼の上下に上下一对の杵を上下摺動可能に保持させておく。杵先を臼内に挿入した上杵と、下杵とを上下のロールの間を通過させることにより臼内に充填したしいたけ等の混合物を圧縮成形する。この種の打錠機を使用する場合、上下の杵が上下のロールの外周向に繰り返しきな力で圧接するため、損傷や磨耗が激しい。そのため、上記した水分含有量、保形剤等の値は厳密に調整し、杵やロールへの負荷を最小限に抑える必要がある。

【0032】錠剤のサイズは任意であるが、隨時隨所にて摂取するには一定量を携帯し易く、且つ、飲み易い大きさとする必要がある。一方、取り扱いの容易さと必要摂取量等から、余り小さくすることもできない。そこで、双方の必要性を考慮すると、前記した直径5~12mm(好ましくは7~10mm)、高さ3~7mm(好ましくは4~6mm)程度が妥当と考えられる。

【0033】このような工程を経ることにより、栄養価の高いしいたけの含有成分を劣化、減少させることなく飲み易い錠剤に加工することができ、作業環境が悪化することもなく、打錠機への負荷も極力抑えることができる。

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(54) TABLET OF LENTINUS EDODES SING. AND ITS PRODUCTION

(57)Abstract:

PROBLEM TO BE SOLVED: To produce a readily drinkable nourishing supplementary food utilizing Lentinus edodes Sing. abundantly containing various nutrients and provide a method for producing the food without deteriorating and reducing the contained ingredients.

SOLUTION: This tablet comprises ingredients of Lentinus edodes Sing., a shape retaining agent and a shape stabilizer. The moisture content is regulated to a prescribed value. The tablet of the Lentinus edodes Sing. of a prescribed shape and size is obtained by mixing the ingredients of the Lentinus edodes Sing. with the shape retaining agent and shape stabilizer, drying the resultant mixture at a relatively low temperature, regulating the moisture content to the prescribed value, then cooling the regulated mixture to normal temperatures and subsequently compression forming the cooled mixture.

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CLAIMS

[Claim(s)]

[Claim 1] The tablet which is equipped with a shiitake mushroom component, a shape retaining agent, and a configuration stabilizer, is characterized by adjusting a moisture content to a predetermined value, and can be eaten and cooked.

[Claim 2] The tablet of shiitake mushroom according to claim 1 with which said shape retaining agent is characterized by being a dietary fiber.

[Claim 3] The tablet of shiitake mushroom according to claim 1 with which said shape retaining agent is characterized by being a dietary fiber and starch.

[Claim 4] The tablet of shiitake mushroom given in any of claims 1-3 characterized by including said shape retaining agent ten to 20% of the weight they are.

[Claim 5] The tablet of shiitake mushroom given in any of claims 1-4 they are with which said configuration stabilizer is characterized by being a sugar ester.

[Claim 6] The tablet of shiitake mushroom given in any of claims 1-4 characterized by including said configuration stabilizer two to 5% of the weight they are.

[Claim 7] The tablet of shiitake mushroom given in any of claims 1-6 characterized by said shiitake mushroom component being the powder of shiitake mushroom which irradiated ultraviolet rays and was dried they are.

[Claim 8] The tablet of shiitake mushroom given in any of claims 1-6 characterized by said shiitake mushroom component being the concentration liquid of the shiitake mushroom which is made to dip in predetermined time water the shiitake mushroom which irradiated ultraviolet rays and was dried, and is obtained they are.

[Claim 9] The tablet of shiitake mushroom given in any of claims 1-8 characterized by adjusting a moisture content to 5 - 12% of the weight they are.

[Claim 10] the nutrient with which the absorption to the inside of the body etc. is promoted by a shiitake mushroom component, the nutrient which is not contained in shiitake mushroom, the nutrient by which only a minute amount is contained in shiitake mushroom, or the nutrient contained in shiitake mushroom -- since -- the nutrient chosen as arbitration, a shape retaining agent, and a configuration stabilizer -- since -- it becomes -- the tablet of shiitake mushroom.

[Claim 11] The tablet of shiitake mushroom according to claim 10 with which said nutrient is characterized by being calcium.

[Claim 12] The manufacture approach of the tablet which mixes a shape retaining agent and a configuration stabilizer for a shiitake mushroom component, cools to ordinary temperature after drying these at low temperature comparatively subsequently and adjusting a moisture content to a predetermined value, is characterized by fabricating the tablet of predetermined configuration and magnitude by subsequently carrying out compression molding, and can be eaten and cooked.

[Claim 13] The manufacture approach of the tablet of the shiitake mushroom according to claim 12 characterized by being the shiitake mushroom powder with which said shiitake mushroom component irradiated ultraviolet rays, dried shiitake mushroom, and ground this desiccation shiitake mushroom.

[Claim 14] It is characterized by being the concentration liquid of shiitake mushroom with which said shiitake mushroom component made the shiitake mushroom which irradiated ultraviolet rays and was dried dip in predetermined time water, and generated it, can cook [can be,], and is the manufacture approach of the tablet of shiitake mushroom according to claim 12.

[Claim 15] The manufacture approach of the tablet of the shiitake mushroom according to claim 12 characterized by mixing the nutrient chosen by arbitration from the nutrient by which it is not contained or only a minute amount is contained in shiitake mushroom at shiitake mushroom at said shiitake mushroom component.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the manufacture approach of the tablet of the shiitake mushroom which can take in easily, and the tablet of shiitake mushroom.

[0002]

[Description of the Prior Art] While being able to take in easily and being able to expect an improvement of a body by continuous use with health consciousness in recent years, the increment in an adult disease, etc., various kinds of supplements (supplement) without a side effect like drugs are supplied to the commercial scene.

[0003] The workpiece of shiitake mushroom is in one of the objects widely known as such a supplement. since shiitake mushroom decrease the cholesterol in blood , can expect various effectiveness , such as improvement in an analgesic action , a ** gun operation , and the immunity force , and control of the blood sugar level , above and do not almost have a calorie , include mostly the ergosterol which be the precursor of vitamin D , vitamin B , ERITADENIN (lentinan) , a double strand ribonucleic acid , minerals , a dietary fiber , etc ., the food which used shiitake mushroom as the principal component can be say to be an ideal supplement .

[0004]

[Problem(s) to be Solved by the Invention] However, in spite of knowing the above-mentioned efficacy, the present condition is that the supplement which used shiitake mushroom as the principal component is not used not much widely. It is mentioned that many of conventional shiitake mushroom food is powdered and granularity (it calls "powdered" below) as one of the reason of the. The difficulty of drinking, such as adhering in a throat or opening that it is powdered, will not be avoided, but taking in continuously will follow pain on a day several times. For [a small child, elderly people, a weak person, etc.] especially, intake is very difficult. moreover -- if it is made to take in with moisture, since the amount of whole will increase, if it stops being able to carry out little deer intake at once and is going to increase the intake of a shiitake mushroom component -- the frequency of intake -- not increasing -- since it is necessary to obtain and to prepare potable water etc. independently, in a train, intake is difficult, for example. Furthermore, with the extractives of the liquid which was made to dip in water the case where powder is combed for moisture, and dried shiitake mushrooms, and obtained them; a stinking thing problem newly occurs, and for a person poor at a smell peculiar to shiitake mushroom, it will take in putting up with a smell, and will be too accompanied by pain.

[0005] Thus, it is thought that the conventional shiitake mushroom food had become the failure of spread at eye the backlash which was unsuitable as a supplement which it cannot be said to be "the supplement which can be taken in easily" since it gives patience, pain, and inconvenient on the occasion of intake, but it takes in [eye] continuously for a long period of time, and demonstrates effectiveness gradually.

[0006] This invention condenses various nutrients, a drug effect component, etc. which are contained in shiitake mushroom in view of the above-mentioned trouble, and it aims at offer of the manufacture

approach of the tablet of the shiitake mushroom which can be fertilized, without spoiling the tablets of the shiitake mushroom which can take in easily and efficiently, and these active principles. In addition, in this application, the word of a nutrient means not only it that is generally said but all the components that bring good effect widely to the body.

[0007]

[Means for Solving the Problem] In order to solve the above-mentioned conventional technical problem, this invention is equipped with a shiitake mushroom component, a shape retaining agent, and a configuration stabilizer, and is characterized by adjusting a moisture content to a predetermined value.

[0008] the desirable voice of this invention -- like -- setting -- (1) -- said shape retaining agent combines a dietary fiber, or this and starch.

(2) Said shape retaining agent is included ten to 20% of the weight.

(3) Said configuration stabilizer is a sugar ester.

(4) Said configuration stabilizer is included two to 5% of the weight.

(5) Said shiitake mushroom component is the powder of shiitake mushroom which irradiated ultraviolet rays and was dried.

(6) Said shiitake mushroom component is the concentration liquid of the shiitake mushroom which is made to dip in predetermined time water the shiitake mushroom which irradiated ultraviolet rays and was dried, and is obtained.

(7) Adjust a moisture content to 5 - 12% of the weight.

[0009] moreover, the nutrient with which the absorption to the inside of the body etc. is promoted by the nutrient by which it is contained in a shiitake mushroom component, and the nutrient by which it is not contained in shiitake mushroom, the nutrient by which only a minute amount is contained in shiitake mushroom or shiitake mushroom in this invention -- since -- the nutrient chosen as arbitration, a shape retaining agent, and a configuration stabilizer -- since -- it is characterized by becoming.

[0010] In the desirable mode of this invention, said nutrient is calcium.

[0011] Furthermore, a shape retaining agent and a configuration stabilizer are mixed for a shiitake mushroom component, after drying these at low temperature comparatively subsequently and adjusting a moisture content to a predetermined value, it cools to ordinary temperature, and this invention is characterized by fabricating the tablet of predetermined configuration and magnitude by subsequently carrying out compression molding.

[0012] the desirable voice of this invention -- like -- setting -- (1) -- it is the shiitake mushroom powder with which said shiitake mushroom component irradiated ultraviolet rays, dried shiitake mushroom, and ground this desiccation shiitake mushroom.

(2) It is the concentration liquid of shiitake mushroom with which said shiitake mushroom component made the shiitake mushroom which irradiated ultraviolet rays and was dried dip in predetermined time water, and generated it.

(3) Also mix the nutrient chosen by arbitration from the nutrient by which it is not contained or only a minute amount is contained in shiitake mushroom at shiitake mushroom at said shiitake mushroom component.

[0013]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained in full detail.

[0014] (The first gestalt) As an example of the tablet which is applied to this invention, and can be been and cooked, it has shiitake mushroom powder (it is the same the following containing granulation), a shape retaining agent, and a configuration stabilizer, and what adjusted the moisture content to the predetermined value is mentioned. although it is common to use [which ground with the grinder the shiitake mushroom dried beforehand as shiitake mushroom powder], if what was dried after judging raw shiitake mushroom coarsely by a cutter etc. is used, desiccation and grinding can be performed efficiently, floor to floor time can be shortened, and degradation of a grinder with time can also be controlled as much as possible. In addition, it is made to fully dry until a moisture content becomes about 10 or less % of the weight in consideration of the effect on a grinder, in drying shiitake

mushroom.

[0015] ***** , a lentigo, etc. it is supposed not only from **** etc. but from ***** marketed as raw or desiccation shiitake mushroom or an exterior reason mainly that there is no commodity value if it remains as it is are sufficient as the shiitake mushroom used for this invention like this. However, since an impurity may remain when using shiitake mushroom Jamie etc., a filter, a filter, etc. need to remove an impurity.

[0016] Although shiitake mushroom contains many minerals, such as vitamin B and a potassium, dietary fibers, etc. also in the raw state, since the ergosterol (called previtamin D) which changes to vitamin D by carrying out sun drying and carrying out is included in abundance, in addition to the drug-regulatory affairs-effectiveness described above by carrying out sun drying and carrying out, the absorption to the inside of the body of calcium is promoted, and various kinds of effectiveness of activating the skin is demonstrated. Therefore, although it is most desirable to use the desiccation shiitake mushroom which carried out sun drying also of the shiitake mushroom used as the raw material of a tablet, and carried out it, since carrying out sun drying takes time amount (even the minimum about 4 hours or more), it is not suitable for fertilization. On the other hand, although many of commercial dried shiitake mushrooms have adopted the short-time desiccation by warm air, a steam, etc. from the point of productivity, now, the above mentioned ergosterol does not change to vitamin D, and the increment in a drug effect component is not seen. Then, this invention became possible [attaining improvement in the productivity by compaction of the drying time, and the increment in a drug effect component called generation of a lot of vitamin D to coincidence] by adopting the UV irradiation desiccation which demonstrates the same effectiveness as ***** and abbreviation. Of course, it is also possible to use the desiccation shiitake mushroom of *****. Although the time amount which irradiates ultraviolet rays takes into consideration and determines a season, the climate of an area, a room temperature, the moisture content of shiitake mushroom, etc., it is usually enough in about 1 - 2 hours.

[0017] As said shape retaining agent, if fundamentally used as an object for tablet shaping, although it is not asked, if it takes into consideration that it is what requires this invention for a supplement, it has [an artificial compost or the artificial animal matter] problems, such as allergy, and is not desirable [a class]. this invention persons found out bringing about a result with most suitable dietary fiber, especially microcrystal cellulose, as a result of trying many things. A suitable result means that had few bad influences to a tableting machine, and the intake person of allergic constitutions, such as atopy **, had still less effect while solidifying shiitake mushroom powder in a request configuration. If it is a dietary fiber, the effectiveness which was excellent also in respect of alimentation will be brought about. Moreover, it is thought that the same result is obtained even if it transposes some dietary fibers to the starch generated from corn etc., especially pregelatinization starch.

[0018] In the case of shiitake mushroom powder, the addition ratio of a shape retaining agent makes it 10 - 20 % of the weight. At less than 10 % of the weight, the degree of hardness of a tablet is low and there is a possibility that a tablet may be damaged at the time of **** of a bottling process or a product etc. On the other hand, although the reinforcement of mold goods will increase if 20 % of the weight is exceeded, the load to a tableting machine is large and degradation of mortar and pestle becomes intense. Moreover, if 15 % of the weight is exceeded, since it will be conspicuous with ZARA in mold goods and taste will get a little bad, taste will be eased, if the amount of starch is increased when exceeding 15 % of the weight. In addition, when using the granulation of shiitake mushroom, since it becomes easy to carry out shaping by a degree of hardness required as a tablet not changing, the amount of a shape retaining agent is reduced and it is good also as about 10 - 16 % of the weight.

[0019] Said configuration stabilizer is useful to preventing that tablets bind mutually, giving gloss to a front face, and raising commodity value while it raises the degree of hardness of mold goods and prevents the breakage at the time of **** etc. like said shape retaining agent. If a sugar ester is used, a smell peculiar to shiitake mushroom is eased, and although the class of configuration stabilizer is also unquestioned, since there is an operation make a tablet easy to drink, it can be said that it is desirable. 2 - 5 % of the weight is [that what is necessary is just to carry out little addition] usually enough as a configuration stabilizer. At less than 2 % of the weight, when the rate which tablets bind became high by

leaps and bounds and 5 % of the weight was exceeded, while the amount of a shiitake mushroom component or a shape retaining agent decreased and causing deterioration of the value as a supplement, the inclination which shaping stops being able to carry out easily was seen.

[0020] The above-mentioned shiitake mushroom powder, a shape retaining agent, and a configuration stabilizer are mixed, and a moisture content is adjusted to 5 - 12% of the weight. It may not solidify in request configurations -- a crack goes into the tablet fabricated at less than 5 % of the weight, or a part suffers a loss. Moreover, when 12 % of the weight is exceeded, powdered [some] adhere to a tableting machine, a superfluous load is applied to mortar and pestle, and when extreme, there is also a possibility that mortar and pestle may be damaged. Therefore, adjustment of a moisture content is very important for manufacture of the tablet of shiitake mushroom.

[0021] Although configurations of the tablet of shiitake mushroom fabricated, such as a short cylindrical shape, a globular form, and a short triangle pole form, were arbitrary, when it was the go stone form which enlarged R of a both-sides edge, it was easy to carry out shaping (making tablet), and ***** (absorptivity) in the inside of the body was also good.

[0022] Since the tablet which consists of the above-mentioned component, and can be been and cooked does not have a possibility of the time of transportation, etc. and damaging or since possibility of starting allergy ** sufficient reinforcement (degree of hardness) low even if the man of an allergic constitution takes in, since an animal component is not included not to mention a nutritive value being high, and it has adjusted each component in the predetermined value further, its burden to a tableting machine is also very advantageous also in respect of manufacture small.

[0023] (The second gestalt) The tablet which is applied to this invention, and can be been and cooked can also use the concentration liquid of the shiitake mushroom which is made to dip desiccation shiitake mushroom in predetermined time water, and is obtained as a shiitake mushroom component again.

Although the shape retaining agent and the configuration stabilizer are the same as that of the first above-mentioned gestalt and the same is fundamentally said of a moisture content, since the shiitake mushroom component itself contains moisture so much, in case a moisture content is adjusted in the phase which mixed the shape retaining agent and the configuration stabilizer, in this gestalt, desiccation becomes main. The shiitake mushroom component of this gestalt is the concentration liquid of the shiitake mushroom obtained by carrying out heating concentration to about 50%, after dipping in a predetermined time (4 - 8 hours) molten bath, or water the shiitake mushroom dried by the same approach as the first gestalt. Since the time amount made to dip in water is long compared with shiitake mushroom powder, in respect of mass-production nature, it is a little inferior, but in order not to disperse and float in works like powder, work environment is good and futility's of a raw material decreases. Moreover, since ERITADENIN with the operation which is included in shiitake mushroom and which reduces blood pressure is rich in water solubility, it will be contained in the direction of the concentration liquid which is and can be cooked from shiitake mushroom powder (in condensed form).

[many]

[0024] Among the nutrients contained in shiitake mushroom, since a dietary fiber etc. does not have water solubility, even if it makes it dip, it does not begin to melt into water. Therefore, when a tablet is made using the concentration liquid of shiitake mushroom, only some components of shiitake mushroom can be taken in. However, it is thought also from many men of drinking the return juice of current dried shiitake mushrooms without fail every morning existing that there is nothing inferiority as a supplement only also considering a water-soluble shiitake mushroom component (especially ERITADENIN) as a principal component. Of course, it is also possible to dry and grind the shiitake mushroom after making it dip in water like said first gestalt, and to process it into a tablet. In this case, although a water-soluble component will be contained, since a dietary fiber and vitamin B are still contained in abundance, they are not inferiority as a mist beam supplement considering this as a tablet. Therefore, in this gestalt, several sorts of tablets which separated the abundant components of shiitake mushroom and were based on the request of an intake person can be fabricated.

[0025] (The third gestalt) the nutrient with which, as for this invention, the absorption to the inside of the body etc. is promoted by a shiitake mushroom component, an aforementioned shape retaining agent,

and an aforementioned configuration stabilizer by the nutrient which is not contained in shiitake mushroom, the nutrient by which only a minute amount is contained in shiitake mushroom, or the nutrient contained in shiitake mushroom -- since -- the nutrient chosen as arbitration may be added. Although shiitake mushroom contains vitamin B, minerals, etc. in abundance as it was described above, many all nutrients are not included. That is, considering nutrition balance, it may not be able to be said from an intake person's age, condition, a body, etc. that just the component of shiitake mushroom is enough. Moreover, in the nutrient contained in shiitake mushroom, that from which a suitable result is obtained is also contained by promoting the absorption to the inside of the body of other nutrients besides what brings about effectiveness good for the body in itself, or taking in to other nutrients and coincidence. It is necessary to add these nutrients at a shiitake mushroom component to use such a nutrient effectively. Furthermore, even if contained in shiitake mushroom, I want to take in more nutrients which cannot be easily taken in from other food from a supplement.

[0026] the nutrient which is not contained in shiitake mushroom with this gestalt in consideration of such a point, the nutrient by which only a minute amount is contained in shiitake mushroom, or the nutrient with which the absorption to the inside of the body etc. is promoted by the nutrient contained in shiitake mushroom -- since -- it decided to add the nutrient chosen as arbitration. For example, it can be said that these [its] are desirable as a nutrient to add since the vitamin D which changed from the above mentioned ergosterol has the work which promotes the absorption to the inside of the body of calcium or protein. What is necessary is just to use this desiccation powder etc., since it is mostly contained in deep yellow vegetables including the leaf of a Japanese radish to add vitamin A, C, K, etc.

[0027] (The manufacture approach) Next, the manufacture approach of the tablet which is applied to this invention, and can be been and cooked is explained. First, a shape retaining agent and a configuration stabilizer are mixed by the predetermined ratio for the above-mentioned shiitake mushroom component (powder or concentration liquid) (77 % of the weight of shiitake mushroom components, 15 % of the weight of microcrystal celluloses, 5 % of the weight of pregelatinization starch, 3 % of the weight of sugar esters as an example).

[0028] subsequently, these -- about 60-80 degrees C -- it is made to dry gradually under low temperature comparatively Desiccation by sunlight or UV irradiation may be used at this time, and the dried shiitake mushrooms dried by warm air etc. can also be used as a shiitake mushroom component in this case. Namely, what is necessary is just to dry shiitake mushroom by sunlight or UV irradiation in which phase which manufactures a tablet. While there is a possibility that the nutrient may carry out degradation, decomposition, etc. with heat when another nutrient is added like the third gestalt of the above although what is necessary is just to make it dry under an elevated temperature 100 degrees C or more in order to shorten the drying time, it is not avoided that work environment also gets worse. Therefore, although there is difficulty somewhat in respect of mass-production nature, it is good to make it dry under low temperature on the whole. In addition, although it is said that there is no possibility that the main nutrients contained in shiitake mushroom may carry out degradation, decomposition, etc. with heat, since there is also a possibility that some bad influences are expected to be a certain things by rapid elevated-temperature desiccation, and heat conversion may arise into the part near a steam or a warm air grille when extreme, elevated-temperature desiccation should be avoided also from these points.

[0029] As the approach of desiccation, conventionally, although a warm water type, a steamy type, a warm air type, etc. can consider the well-known various approaches, they explain the outline of equipment in which the steam was used as an example. A reducing valve is arranged to the one time side of an indirect heating container, a vacuum pump is arranged to secondary, by drawing in with this pump, a low-temperature steam 100 degrees C or less is generated in negative pressure, it supplies in an indirect heating container, and the shiitake mushroom component (powder or concentration liquid) supplied to the sealing interior of a room in this container is dried. Thus, the merit using a steam is that a heat transfer coefficient can perform uniform large heating. On the other hand, since thermal transmittance of a steam is large and there is a problem that a heating rate is too early, it is desirable to use a low-temperature steam as much as possible. In this desiccation process, it adjusts to the predetermined value which checked and described above the moisture content of the shiitake mushroom

of the sealing interior of a room by the hygrometer, the weight sensor, etc.

[0030] Subsequently, such mixture is cooled to ordinary temperature (20-25 degrees C). Although natural air cooling is sufficient as cooling, it does not interfere, even if it puts into a cold blast warehouse, a refrigerator, etc. and cools quickly. When the hot (60-80 degrees C) mixture immediately after desiccation was put into the tabletting machine as it was, said shape retaining agent and a configuration stabilizer did not act effectively, but there was a case where it was not solidified by the desired configuration. It is because it can check whether deformation, conversion, breakage, etc. produce the environmental temperature to which, as for having decided to cool to ordinary temperature, an intake person usually keeps a tablet by being ordinary temperature and fabricating at this temperature at the time of storage of an intake person.

[0031] Subsequently, the above-mentioned mixture is covered over a tabletting machine, and it presses by tabletting pressure force 3-6 t/cm²G as 5-12mm of diameters of a making tablet, and about 3-7mm of restoration quantities. As an example of a tabletting machine, the outline configuration of a rotating type (rotary system) powder compacting machine is explained. A turntable is arranged horizontally pivotable through a ** shaft in a predetermined configuration and the frame of size, and two or more mortars are prepared in this turntable in a fixed pitch. each -- the mortar makes the pestle of a vertical pair hold possible [vertical sliding] up and down a pestle -- the point -- a mortar -- it inserted inside -- the upper -- a pestle -- lower -- passing between the rolls of the upper and lower sides of a pestle -- a mortar -- mixture, such as shiitake mushroom with which it was filled up inside, is pressed. Damage and wear are intense in order that an up-and-down pestle may carry out a pressure welding to ***** of an up-and-down roll by the big force repeatedly, when using this kind of tabletting machine. Therefore, it is necessary to adjust strictly the value of the above-mentioned moisture content, a shape retaining agent, etc., and it needs to press down a pestle and the load to a roll to the minimum.

[0032] Although the size of a tablet is arbitrary, it is necessary to consider as the magnitude which is easy to carry a constant rate to take in here and there at any time, and is easy to drink. On the other hand, it cannot be made not much small from an ease, need intake, etc. of handling, either. Then, if the needs for both are taken into consideration, it will be thought that the above mentioned diameter of 5-12mm (preferably 7-10mm), and above mentioned height extent of 3-7mm (preferably 4-6mm) are appropriate.

[0033] The load to a tabletting machine can also be pressed down as much as possible, without being able to process it into the tablet which is easy to drink, without deteriorating and decreasing the component of shiitake mushroom with a high nutritive value by passing through such a process, and work environment getting worse.

[Translation done.]